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EXAMINER

PARSONS, THOMAS H

ART UNIT

PAPER NUMBER

1741

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/735,260

Applicant(s)

PARISE, RONALD J.

Examiner

Thomas H Parsons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims 1-27

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 26 March 2002 is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

*Response to Amendment*

1. This is in response to the amendment filed 28 March 2002. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

*Drawings*

2. The objection to the drawings as failing to comply with 37 CFR 1.84(p)(5) because they include reference sign(s) not mentioned in the description has been **withdrawn** in view of the Applicant's amendment.

3. The objection to the drawings as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference sign(s) mentioned in the description has been **withdrawn** in view of the Applicant's amendment.

4. The objection to the drawings as failing to comply with 37 CFR 1.84(p)(4) because the same reference character has been used to designate different parts has been **withdrawn** in view of the Applicant's amendment.

*Specification*

5. The objection to the disclosure because of informalities has been **withdrawn** in view of the Applicant's amendment.

***Claim Objections***

6. The objection to the claims because of informalities has been **withdrawn** in view of the Applicant's amendment.

***Claim Rejections - 35 USC § 112***

7. The rejection of claim 23 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been **withdrawn** in view of the Applicant's amendment.

***Claim Rejections - 35 USC § 103***

8. The rejection of claims 1-6, 9-14, 18 and 22 under 35 U.S.C. 103(a) as being unpatentable over Lemley (4,338,560) has been withdrawn in view of a new grounds of rejection.

***Double Patenting***

9. The rejection of claims 19-21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 6 and 7 of U.S. Patent No. 6,162,985 has been withdrawn.

***Response to Arguments***

10. Applicant's arguments with respect to claim 1-21 have been considered but are moot in view of the new ground(s) of rejection set forth below.

**NEW DETAILED ACTION**

***Claim Objections***

11. Claim 19 is objected to because of the following informalities:

Line 8, suggest inserting "area" after "surfaces".

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claims 1-18 and 22-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 10: The recitation "or proximate thereto" in claims 1 and 10 was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

14. Claims 19-21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification, while being enabling for an electricity generating device comprising a third junction surface disposed in contact with a first and second junction surface and providing a temperature difference between the first and second junction that is different from the third so as to product a thermoelectric potential, does not reasonable provide enablement for an electricity generating device wherein a thermoelectric potential different is produced without a junction between the first and second junction.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with claim 19.

***Claim Rejections - 35 USC § 102***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-7, 9-14, 16, 18, 22, 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (5,405,680).

Claims 1 and 10: Chang et al. in Figures 3 and 4 disclose a method of radiating thermal energy from a terrestrial position into deep space, and a device for transmitting thermal energy from an object into deep space comprising arranging a thermal energy transmitting material

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(coating 14) over an object (window 12 of automobile 10); and positioning the thermal energy transmitting material so that a transmitting surface thereof faces deep space, wherein the object includes objects (vehicles and building structures) on the surface of the earth and proximate thereto (abs.; col. 1: 10-12; col. 3: 3-6, 37-41; col. 3: 51-col. 4:3; col. 5: 8-11; and col. 7: 14-25).

The material of Chang et al. would inherently provide the claimed spectral surface properties as the material of Chang et al. is the same as that disclosed in the instant case (col. 3:49-51; col. 4:5-8; col. 5:12-20; and col. 6:32-37 which discloses a material characterized by high thermal emissivity in the 8-13  $\mu\text{m}$  wavelength region).

Claim 2: Chang et al. in the abstract disclose that the material may be applied to the exterior, non-window surfaces of building structures which would inherently provide for covering the object with transmitting material only at intervals during which the object is not in direct sunlight.

Claims 3 and 11: Chang et al. on col. 5:32-38 disclose that the material has a normal spectral emissivity ranging from about 0.8 to about 1.0.

Claims 4, 5, 12 and 13: The material of Chang et al. would inherently provide the claimed absorptivity because the material of Chang et al. has the same spectral surface properties as those disclosed in the instant case.

Claims 6 and 14: Chang et al. disclose that the spectral band is selected from the group consisting of about 8  $\mu\text{m}$  to about 13  $\mu\text{m}$  (col. 3:41-51; col. 4: 5-9; col. 6: 32-37; and col. 7: 40-41).

Claims 7 and 16: Chang et al. disclose that the material comprises a suspension of a spectral substance (semimetal and selective emissive material) in a polymer base (paint).

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Claims 9 and 18: The material of Chang et al. would inherently provide a coating that reflects incoming thermal infrared electromagnetic energy because the material of Chang et al. is similar in composition and has the same surface spectral properties as that claimed in the instant case.

Claim 22: Chang et al. in Figure 3, 4 and 13 discloses that the thermal energy transmitting material is positioned in thermal contact with a heat transfer surface (automobile, vehicle, houses building structure) (abs.; and col. 3:3-6).

Claims 24-27: Chang et al. disclose that the object is an automobile, a vehicle (which would encompasses an airplane, a house or building structure. These structures would inherently be located between about an altitude of flying aircraft and about the surface of the earth, as set forth in claims 24 and 25 and between an altitude of about 60,000 feet from the surface of the earth and about the surface of the earth, as set forth in claims 26 and 27.

### *Claim Rejections - 35 USC § 103*

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. as applied to claims 1 and 22, respectively, above, and further in view of Stearns (3,053,923)



Claim 15: The rejection of claim 1 is as applied, argued, and disclosed above, and incorporated herein.

Chang et al. do not disclose that the thermal transmitting material is disposed within a pressure cell having a pressure less than ambient.

Stearns in Figure 4 discloses thermal transmitting material (58 and 64 of aluminum) disposed within a pressure cell having a pressure less than ambient (gas-tight, transparent envelop 72).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chang et al. by using the pressure cell of Stearns because Stearns discloses a pressure cell that would have prevented hot junctions from being cooled by convection thereby improving the overall performance of the method.

Claim 23: The rejection claims 1 and 22 are as applied, argued, and disclosed above, and incorporated herein.

The rejection is as set forth above in claim 15.

19. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Stearns.

Claim 19: Stearns in Figures 4 discloses a device for use in the earth's atmosphere wherein a first junction surface in thermal contact with solar energy (52); a second junction surface in thermal contact with an object located at about a surface of the earth or proximate thereto (col. 39-45 discloses one surface perpendicular to solar radiation and the opposite surface as the lower surface facing earth); and an electricity generating cell intermediate the first and second junction surface (semiconductor material disposed between the first and second junction

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surfaces); wherein the first and second junction surfaces are at a temperature different from each other producing a thermoelectric potential between first and second junction surfaces (col. 1:43-58 which discloses producing electrical energy when one of the junctions is at a higher temperature than the other).

20. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stearns as applied to claim 19 above, and further in view of Gomez (4,251,290).

Stearns is as applied, argued, and disclosed above, and incorporated herein.

Stearns in Figure 2 discloses a first semiconductor materials (semiconductor bars 10 or 14) disposed between the first junction surface (12) and the second junction surface (16 or 18) having a first semiconductor material having a straight geometry.

Stearns does not disclose that the first semiconductor material has a geometry which increases thermal resistivity as set forth in claim 20, and wherein the geometry is curved, coiled, snaking, or a combination thereof as set forth in claim 1.

Gomez in Figures 1-5 discloses a first semiconductor material (20 or 40 or 50) having a geometry which increased thermal resistivity (minimizes heat transfer) wherein the geometry is curved or snaking (i.e, square C shaped or squared Z shaped) (col. 1:5-col. 2:37; col. 2:58-col. 4:25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Stearns by replacing the first semiconductor material with the first semiconductor material of Gomez because Gomez teaches a semiconductor material which has advantageous physical construction to enhance the generation

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of electricity by reducing the resistance in the thermocouple electrical path and minimize the loss by enlarging the area subjected to heat thereby improving the overall efficiency of the device.

2. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. as applied to claims 1, 10, 11, and 16 above, and further in view of Altman (4,147,040).

Chang et al. are as applied, argued, and disclosed above, and incorporated herein.

Chang et al. do not disclose spectral substance selected from the group consisting of carbon black acetylene soot, camphor soot, zinc sulfide, silver chloride, potassium chloride, and zinc selenide.

Altman disclose a spectral substance (infrared radiation transmitting material) selected from the group consisting zinc sulfide and zinc selenide (col. 4:42-47):

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chang et al. by using the spectral substance of Altman because Altman teaches a spectral substance that would have provide for a continuous, uninterrupted and unobscured flow of heat form a subject surface to a heat sink and through a heat conduit thereby improving the overall method for cooling a subject thermal load that emit infrared radiation.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (703) 306-9072.

The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

Thomas H Parsons  
Examiner  
Art Unit 1741

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June 11, 2002